

SRI VENKATESWARA UNIVERSITY:TIRUPATI
SEMESTER-III
W.E.F.2024-25
STATISTICS (MINOR)
COURSE 2: STATISTICAL METHODS

Theory **Credits: 3** **3 hrs/week**

I. Learning Outcomes

After successful completion of the course students will be able to:

1. To get the knowledge of estimating future values by using curve fitting.
2. To calculate the relationship between bivariate data.
3. To find the relationship about the multivariate data. □
4. To acquaint about the forecasting of the data by using regression techniques.
5. To find the association of the categorical data by using attributes.

II. Syllabus

Unit – 1: Curve fitting

Bivariate data - Principle of least squares - Fitting of n^{th} degree polynomial - Fitting of straight line - Fitting of Second degree polynomial or Parabola - Fitting of family of exponential curves and Power curve.

Unit – 2: Correlation

Meaning - Types of Correlation - Measures of Correlation – Scatter diagram - Karl Pearson's Coefficient of Correlation - Properties - Rank Correlation – Coefficient of Rank Correlation (with and without ties) – Properties - Bivariate frequency distribution - Correlation coefficient for bivariate data and problems.

Unit – 3: Multiple and Partial Correlation :

Coefficient of concurrent deviation - probable error and Standard Error - Coefficient of determination - Multiple and Partial correlation coefficients (three variables only) - Properties and Problems- Correlation ratio.

Unit – 4: Regression

Concept of Regression - Linear and Non Linear regression - Linear Regression – Regression lines - Regression coefficients and its properties - Angle between two lines of regression - Regressions lines for bivariate data and simple problems. Correlation vs regression.

Unit – 5: Attributes

Notations – Class - Order of class frequencies - Ultimate class frequencies - Consistency of data - Conditions for consistency of data for 2 and 3 attributes only - Independence of attributes - Association of attributes and its measures - Relationship between association and colligation of attributes - Contingency table - Square contingency, Mean square contingency, Coefficient of mean square contingency, Tschuprow's coefficient of contingency.

SEMESTER-III

STATISTICS (MINOR) COURSE2 : STATISTICAL METHODS

Practical

Credits: 1

2 hrs/week

III. Syllabus

1. Fitting of straight line
2. Fitting of parabola
3. Fitting of exponential curve $y = ae^{bx}$
4. Fitting of exponential curve $y = a b^x$
5. Fitting of power curve $y = a x^b$
6. Correlation coefficient and regression lines by direct method.
7. Correlation coefficient, regression lines by deviation method
8. Bivariate table.
9. Multiple and Partial correlation coefficients.
10. Yule's coefficient of association and colligation.
11. Square, Mean square, Coefficient of contingencies and Tschuprow's coefficient

Note: Training shall be on establishing formulae in Excel cells and derive the results. The excel output shall be exported to MS word for writing inference.

IV. References

1. S. C. Gupta & V. K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. O. P. Gupta: Mathematical Statistics, Kedar nath Ram nath & Co.
3. P. N. Arora & S. Arora: Quantitative Aptitude Statistics – Vol II, S. Chand & Company Ltd.
4. K. Rohatgi & Ehsanes Saleh: An Introduction to Probability and Statistics, John Wiley & Sons.

V. Suggested Co-curricular Activities:

1. Training of students by related industrial experts
2. Assignments including technical assignments if any.
3. Seminars, Group Discussions, Quiz, Debates etc on related topics.
4. Preparation of audio and videos on tools of diagrammatic and graphical representations.
5. Collection of material/figures/photos/author photoes of related topics.
6. Invited lectures and presentations of stalwarts to those topics.
7. Visits/field trips of firms, research organizations etc.

MODEL PAPER

SEMESTER-III STATISTICS MINOR COURSE 2: STATISTICAL METHODS

Time: 3hrs

Max.Marks : 70

Section – A

Answer any Five of the following questions.

5X4=20M

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

Section – B

Answer All Questions. Each Question carries 10 Marks.

5X10=50M

9. a)

Or

b)

10. a)

Or

b)

11. a)

Or

b)

12. a)

Or

b)

13. a)

Or

b)